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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,865	03/10/2005	Robert E. Lo	23095	6670

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EXAMINER	
MCDONOUGH, JAMES E	

ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
11/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,865	LO ET AL.	
	Examiner	Art Unit	
	James E. McDonough	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Original Rejection

Claims 17, 19-27, 30-31, 33, and 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reynolds (US Patent No. 3,259,532) in view of Grosse et al. (US Patent No. 3,137,127).

Reynolds teaches the use of a carbonaceous substance dispersed in liquid oxygen. This mixture is then incorporated into the interstices of a metal sponge that inherently has hollow spaces of a size that would affect the combustion speed (preferably aluminum or magnesium) (column 1, line 44 to column 2, line 5).

Although, Reynolds does not explicitly disclose the freezing of the liquid oxygen to form a solid monergole propellant, Reynolds does disclose that the liquid oxygen suspension can be incorporated into the interstices by either directly pouring of the suspension onto the sponge or by immersing the sponge in the suspension (column 2, line34 to column 2, line 49). However, because Grosse et al. disclose the use of a fuel/oxidizer or both that are normally gaseous or liquid at room temperature being frozen solid for use as a rocket motor (column 1, line 14 to column 1, line 47) giving the advantage of having a high specific impulse as normal for liquid fuel engines without the typical draw backs such as extra plumbing, valves, and separate containers for the fuel and oxidizer associated with liquid fuel rocket engines

(column 1, line 48 to column 2, line 6), It is prima facie obvious to combine two or three compositions, each taught for the same purpose to yield a third composition for that very purpose. In re Kerkhoven, 205 USPQ 1069, In re Pinten, 173 USPQ 801, and In re Susi, i69 USPQ 423.

Also, it would have been obvious to someone of ordinary skill in the art at the time of the invention to change the size of the hollow spaces in the sponge, thereby affecting the rate of combustion by changing the surface area, since the reaction kinetics of solid reactants are primarily controlled by the available surface area of said reactants. As to limitations which are considered to be inherent in a reference, note the case law of In re Ludke, 169 USPQ 563; In re Swinehart, 169 USPQ 226, In re Fitzgerald, 205 USPQ 594; In re Best et al, 195 USPQ 430; and In re Brown, 173 USPQ 685,688.

Claims 28-29, 34, and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reynolds (US Patent No. 3,259,532) in view of Grosse et al. (US Patent No. 3,137,127) in further view of Stickler (US Patent No. 5,529,648).

Although, neither Reynolds nor Grosse et al. explicitly disclose the use of an initially encapsulated liquid that is then bonded with the solid structure then frozen. However, because Stickler teaches the use of a dispersion of encapsulated liquid within a solid fuel matrix (column 3, line 60 to column 4, line 5) and Grosse et al. disclose the use of a fuel/oxidizer or both that are normally gaseous or liquid at room temperature

being frozen solid together for use as a rocket motor (column 1, line 14 to column 1, line 47), it is prima facie obvious to combine two or three compositions, each taught for the same purpose to yield a third composition for that very purpose. In re Kerkhoven, 205 USPQ 1069, In re Pinten, 173 USPQ 801, and In re Susi, i69 USPQ 423.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reynolds (US Patent No. 3,259,532) in view of Grosse et al. (US Patent No. 3,137,127) in further view of Keilbach et al. (US Patent No. 3,691,769).

Although, neither Reynolds nor Grosse et al. explicitly disclose the use of a protective coating on the solid phase to chemically insulate the two reactants from one another. However because Keilbach et al. disclose that metals when mixed with an oxidizer in a rocket engine need to be protected from oxidation (column 4, line 16 to column 4, line 33), it is prima facie obvious to combine two or three compositions, each taught for the same purpose to yield a third composition for that very purpose. In re Kerkhoven, 205 USPQ 1069, In re Pinten, 173 USPQ 801, and In re Susi, i69 USPQ 423.

Response to Arguments

1.) Applicants amendment substituting monopropellant for monergole raises new issues that require further search and consideration.

2.) Applicants argue that the open pore foam of the instant application is different from the metal sponge used by the reference, however the reference teaches that the difference between a sponge and a foam is wether the pores are connected or not, and since the pores of both the reference and the instant application are both open they have identical structure, although, applicants can be their own lexicographers and define terms as they see fit, they can not change the definition of terms from the reference.

3.) Applicants argue that explosives differ from rocket propellants, however, it is well known that many fuels and oxidizers can be used both in explosives and rocket propellants, the difference between the two is how the ignition is controlled, as for most composition to be explosive they require a detonator, and have the same thermodynamic parameters even though they may proceed with different reaction kinetics.

4.) Applicants argue against the Grosse reference, for not teaching all the limitations, examiner kindly request applicants to read the final or non-final rejection where it is stated that Grosse is used to show motivation for freezing a liquid to a solid, this and most of applicants arguments amount to piece meal analysis of the references, which, is prohibited.

5.) Applicants argue that their invention is not restricted to the proportion of fuel and oxidizer given by Grosse ranging from 0.1 to 50 mm, examiner would like to point out that proportions of ingredients in a composition can not be measured in terms of length, but must be measured in terms of percent, weight, moles, or volume.

6.) Applicants argue that the pore walls are thinner in their invention than in the references, however, applicants are arguing limitations not in the claims, and this is prohibited.

7.) Applicants admit that Keilbach teaches using liquid oxygen and hydrogen, but state that Keilbach does not teach any cryogenic components, examiner has already replied to this argument, applicants appear to be ignoring examiner remarks, but if liquid hydrogen and oxygen are not cryogenic, examiner ask what is cryogenic, are applicants trying to use a different definition than what is accepted for cryogen/cryogenic, because this would be improper, since the instant application is using liquid oxygen and so is the reference, examiner kindly request applicants to explain how liquid oxygen is cryogenic in the instant application but not in the references.

8.) Applicants state at the beginning of page 14 of their arguments that "This reference deals exclusively with liquid propellants", then in the next paragraph applicants state "Since this explosive is a liquid or gel (see col. 2, lines 33 to 46), application of this composition as a rocket propellant must be entirely excluded", examiner ask if liquids

must be entirely excluded from a rocket propellant, how do applicants a.) plan to use a liquid as a rocket propellant and b.) admit that the reference teaches liquid propellants, but then state that liquids can not be used, contrary to what is stated in the references themselves, applicants are reminded that all patyents are considered valid.

9.) Applicants argue that "just because Krivohlavek refers to explosives in terms of emulsions, does not mean that emulsions of cryogenic monergoles can be considered as rocket propellants at all.", however, applicants submit no evidence or teaching that a emulsion of cryogenic monergoles can not be used as rocket propellants.

10.) Applicants start to mention examiners question about how the composition of the reference would shrink but the instant invention would not, but then state that the reference of Grosse is irrelevent to the shrink hole formation, however examiner would like to point out that Grosse is the reference that teaches freezing to a solid, so it indeed is relevent to thermal contraction/shrinking contrary to applicants assertion that it is not relevent, applicants are continuing to ignore examiners questions and remarks, as they do not state how their invention gets around shrink hole formation, just that the reference is not relevent, examiner would like to also point out that applicants initially raised the issue of shrink hole formation and that it would not happen in their invention, but appear not able to provide any evidence to support their argument. 11.)Applicants argue that explosives and rocket propellant are not interchangable, this is not persausive because as stated above explosive and propellant compositions are

disclosed in many patents as being used interchangably and the only difference between the two is the use/non-use of detonators and the strucural arangement of the components, but not the compositions themselves and applicants are reminded that the claims are to composition claims.

12.) The remaining arguments amount to either piece meal analysis of the reference or arguing limitations not from the claims, niether of which is proper nor do they add to the patentability of the claims, for these above reasons all arguments are considered to be unpersausive, and the rejctions are therefore, maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. McDonough whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JEM 11/7/2007

J. A. LORENGO
SUPERVISORY PATENT EXAMINER